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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,664	10/29/2003	Terry Hildreth	117,0002-00000	8387
22882	7590	03/18/2008		
MARTIN & FERRARO, LLP 1557 LAKE O'PINES STREET, NE HARTSVILLE, OH 44632			EXAMINER LIN, KUANG Y	
			ART UNIT 1793	PAPER NUMBER
			MAIL DATE 03/18/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/697,664

Applicant(s)

HILDRETH, TERRY

Examiner

Kuang Y. Lin

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 23-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 23-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7 and 23-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steininger et al. and further in view of US 4,726,415 to Ueno et al.

Steininger et al. substantially show the invention as claimed (see figure 2, the combination of body (15), ball end (39), shank end (43) and fitting (37) or each individual part of these is considered to be an adapter) except that they do not disclose whether the adapter is made of beryllium copper. However, in col. 4, line 14+ of the patent, it discloses that the cup shape piston head is preferably made of beryllium copper alloy. It would have been obvious to make every part of the piston with same material (i.e. beryllium copper) such that they all have the same thermal expansion coefficient and thereby to obtain a better joint between parts during the casting cycle. Also, it would have been obvious to make the adapter with beryllium copper alloy in view of its combination properties of excellent thermal conductivity and mechanical strength. Further, Ueno et al. show that it is conventional to use a unitary adapter 23 in a plunger assembly. Thus, to use a unitary adapter 23 in lieu of "ball and socket" adapter presents no novel or unexpected result and would have been obvious to those of ordinary skill in the casting art, *In re Kuhle*, 188 USPQ 7.

3. Applicant's arguments filed Feb. 25, 2008 have been fully considered but they are not persuasive.

a. Applicant in page 8, 1st para. of the response stated that Steininger reference does not disclose a unitary adapter for maintaining a plunger tip and a plunger rod in fixed relationship with one another. However, it is noted that as the plunger assembly of Steininger is assembled in an operation condition the "ball and socket" is considered as a unitary adapter and the plunger tip and the plunger rod is considered in fixed relationship with one another. Further, the "ball and socket" is an improved design from the conventional unitary adapter for the purpose of self-alignment function. The conventional unitary adapter is shown in US 4,726,415 to Ueno et al. The improved adapter design of Steininger does not render the conventional design unobvious.

b. When an assembly which comprising several parts are rigidly secured together as a single unit, the parts are so combined as to constitute a unitary unit, In re Larson, 144 USPQ 347. Further, the mere fact that a given structure is integral does not preclude its consisting of various elements, Nerwin v. Erlichman, 168 USPQ 177.

c. Applicant in page 8, 2nd para. of the response stated that Steininger does not teach or suggest using beryllium copper for the "ball and socket" adapter. However, Steininger does disclose that the cup shape piston head is preferably made of beryllium copper alloy. It would have been obvious to make every part of the piston with same material (i.e. beryllium copper) such that they all have the

same thermal expansion coefficient and thereby to obtain a better joint between parts during the casting cycle. Also, it would have been obvious to make the adapter with beryllium copper alloy in view of its combination properties of excellent thermal conductivity and mechanical strength.

- d. Applicant in page 9, 2nd para. of the response stated that the mechanical properties necessary for the "ball and socket" adapter control the selection of the material therefor. Applicant in 3rd para. further stated that the mechanical properties of beryllium copper are similar to stainless steel and steel used and considered for use, respectively, for "ball and socket" adapter of Steininger reference. Applicant then argued that given the greater expense of beryllium copper in comparison to the aforementioned steels, it would not have been obvious to use beryllium copper for the "ball and socket" adapter of the Steininger reference. However, during the casting cycle the thermal behavior of each part at the junction surface plays an important factor for the durability of the parts. The difference in thermal expansion of parts will create a great amount of thermal stress at the junction surface and result in premature failure. Thus, it would have been obvious to make the adapter of Steininger with same material as the cup-shaped head (71) to prolong the service life of both adapter and head.
- e. The Exhibits provided by applicant does not overcome the rejection. Since the different in physical, thermal, chemical and mechanical properties are different between steel and beryllium copper, the commercial failure when the

adapter is made of steel can not be used to deduce that the adapter made of beryllium copper will also result in failure.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuang Y. Lin whose telephone number is 571-272-1179. The examiner can normally be reached on Monday-Friday, 10:00-6:30,.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kuang Y. Lin/
Primary Examiner, Art Unit 1793

3-12-08